

## Original Research

### Evaluation of effectiveness of conjunctival autografts using sutures and fibrin glue in patients undergoing pterygium excision surgery: A comparative study

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#### ABSTRACT:

**Background:** The present study was undertaken for comparing the efficacy of conjunctival autografts using sutures and fibrin glue in patients undergoing pterygium excision surgery. **Materials & methods:** Assessment of 50 subjects who were scheduled to undergo pterygia surgery were enrolled. Random division of all the subjects was done into two study groups as follows: Group 1- Sutures group, and Group 2- Fibrin glue. Screening of the patient by brief history and general physical examination was done. Both syringes were placed in a dual injectable system, in which their contents were mixed in appropriate proportions. Suture was placed on suture group. Follow-up was done. Then the results of the procedures were compared in the two groups. **Results:** Mean duration of procedure among subjects of group 1 was 28.6 minutes and was significantly higher in comparison to the subjects of group 2 which was found to be 20.3 minutes. Patient discomfort was significantly less in the glue group in comparison to the suture group. **Conclusion:** Shorter operating time is produced while using fibrin glue for attaching the free conjunctival autograft in pterygium surgery there by reducing patient discomfort.

**Key words:** Autograft, Fibrin glue, Pterygium

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#### INTRODUCTION

Pterygium is a common ocular surface disorder. There is a lack of consensus among ophthalmologists about the optimal medical and surgical management of pterygia. Recurrence is the most common complication after pterygium excision. In a population-based study from rural central India, prevalence of pterygium increased from 6.7±0.8% in the age group from 30–39 years to 25.3±2.1% in the age group of 70–79 years. Three population based studies have described the incidence of pterygium. Barbados eye study has described the nine year incidence of pterygium to be 11.6% (95% CI, 10.1–13.1), the Beijing Eye Study described the 10 year incidence of pterygium in the adult Chinese population to be 4.9%, and the five year cumulative incidence in Bai Chinese population in a rural community was 6.8%.<sup>1-3</sup>

Surgery is the mainstay of treatment for pterygium causing visual disturbances. The primary

complication of pterygium surgery is recurrence defined by regrowth of fibrovascular tissue across the limbus and onto the cornea. Pterygium body is excised carefully with conjunctival scissors and the head of pterygium can be removed from cornea by using a 15 degree Bard Parker blade.<sup>4-6</sup> Tenons and subtenon tissue must be removed carefully as much as possible. Remaining pterygium tissues from over the corneal surface can be removed with a diamond burr. Fibrin glue is a blood derived product which consists of a fibrinogen component and a thrombin component.<sup>6-8</sup> Hence; the present study was undertaken for comparing the efficacy of conjunctival autografts using sutures and fibrin glue in patients undergoing pterygium excision surgery.

#### MATERIALS & METHODS

Assessment of 50 subjects who were scheduled to undergo pterygia surgery were enrolled. Random

division of all the subjects was done into two study groups as follows:

Group 1- Sutures group

Group 2- Fibrin glue

Screening of the patient by brief history and general physical examination was done. Diffuse torch light examination for details of the pterygium and to rule out any other gross ocular pathology. Both syringes were placed in a dual injectable system, in which their contents were mixed in appropriate proportions. Suture was placed on suture group. Follow-up was done. Then the results of the procedures were compared in the two groups. Statistical analysis was done by using SPSS software. Chi square test,

independent t-test and paired t-test were used for assessment of level of significance.

## RESULTS

Group 1 and group 2 subjects had mean age of 41.6 years and 39.6 years respectively. Major proportion of subjects of both the study groups were males. Mean duration of procedure among subjects of group 1 was 28.6 minutes and was significantly higher in comparison to the subjects of group 2 which was found to be 20.3 minutes. Patient discomfort was significantly less in the glue group in comparison to the suture group.

**Table 1: Duration of surgery**

Duration of surgery	Suture group	Glue Group	p- value
Mean	28.6	20.3	0.001 (Significant)
SD	5.8	3.9	

**Table 2: Distribution of patients according to postoperative patient discomfort at day 10**

Patient discomfort	Suture group		Glue Group		p- value
	N	%	N	%	
Absent	21	84	24	96	0.00 (Significant)
Present	4	16	1	4	

## DISCUSSION

Pterygium (also known as surfer's eye) is an ocular surface disease characterized mainly by a wing-shaped growth of limbal and conjunctival tissue over the adjacent cornea. As a result of alterations in local ocular surface homeostasis, the main components of pterygium include proliferative clusters of limbal stem cells (LSCs), epithelial metaplasia, active fibrovascular tissue, inflammation, and disruption of Bowman's layer along the invading apex of the pterygium. As the experimental models have failed to induce pterygium formation in animals, it seems that pterygium is an ocular disease only observed in humans. Although it is a well-known ocular condition since many years ago, numerous studies performed on pathophysiology and management of pterygium have never dissolved some main uncertainties about this common ocular surface disease.<sup>8-10</sup> Hence; the present study was undertaken for comparing the efficacy of conjunctival autografts using sutures and fibrin glue in patients undergoing pterygium excision surgery.

Group 1 and group 2 subjects had mean age of 41.6 years and 39.6 years respectively. Major proportion of subjects of both the study groups were males. Mean duration of procedure among subjects of group 1 was 28.6 minutes and was significantly higher in comparison to the subjects of group 2 which was found to be 20.3 minutes. Coral-Ghanem R et al did a combined prospective and retrospective study to assess the rate of recurrence and complications after primary pterygium removal with conjunctival autograft using fibrin tissue adhesive. Secondarily to compare these results with retrospective series that

underwent the same surgery using sutures. They found out in fibrin glue group 11.3% eyes had recurrence. The time for recurrence ranged from 1.6 months to 13.1 months. No eye underwent reoperation. Other complications included: transitory granuloma formation in 3 cases, partial graft detachment or slippage in 3 and dellen in 1. In the suture group 15 eyes had recurrence. The time for recurrence ranged from 0.7 to 9.7 months. Thus they concluded that the use of fibrin glue as an alternative to sutures in pterygium surgery was associated with good results and few complications.<sup>11</sup>

In the present study, patient discomfort was significantly less in the glue group in comparison to the suture group. Pan HW et al evaluated the safety and clinical efficacy of fibrin glue in pterygium surgery with conjunctival autografting. A total of 342 participants with 366 eyes in 7 studies were analyzed. They searched Medline, EMBASE, Web of Science, Cochrane Central Register of Controlled Trials, and Google Scholar for relevant randomized controlled trials (RCTs). The methodological quality of all the included trials was assessed with the Jadad score. The meta-analysis was performed with the fixed-effects model for complication rate and recurrence rate, and random-effects model for operating time. Fibrin glue was associated with a significantly decreased operating time and was more effective in reducing the recurrence rate compared with suture. There were no significant differences in the complication rate between the 2 groups. Their meta-analysis supports the superiority of fibrin glue to suture in pterygium surgery with conjunctival autografting in that the use of fibrin glue can

significantly reduce the recurrence rate without increasing the risk of complications. Ophthalmologists should consider the use of fibrin glue in pterygium surgery.<sup>12</sup>

### CONCLUSION

Shorter operating time is produced while using fibrin glue for attaching the free conjunctival autograft in pterygium surgery there by reducing patient discomfort.

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